

Effects of Brief Communication Skills Training for Workers Based on the Principles of Cognitive Behavioral Therapy

A Randomized Controlled Trial

Norio Sasaki, MD, Hironori Somemura, PhD, Saki Nakamura, PhD, Megumi Yamamoto, PhD, Manabu Isojima, MD, Issei Shinmei, PhD, Masaru Horikoshi, PhD, and Katsutoshi Tanaka, PhD

Objective: Stimulating communication is an important workplace issue. We investigated the effects of a brief communication skills training (CST) program based on the principles of cognitive behavioral therapy (CBT). **Methods:** A randomized controlled trial was conducted on 206 white-collar workers. The intervention group underwent a 2-hour CST group training conducted by an occupational physician. **Result:** The results of the intention-to-treat analysis using a mixed-effects model showed that there was a significant interaction between group and time observed for the item “thinking together to solve problems and issues” ($P=0.02$). The effect size (Cohen d) was 0.35 (95% confidence interval, 0.07 to 0.62). **Conclusions:** The present study suggests that a brief CST based on the principles of CBT could improve the communication behavior of workers.

Stimulating communication is becoming an important workplace issue. Previous observational studies have shown that effective communication among workers is significantly correlated with their mental health level.^{1–5} Moreover, studies indicate that effective communication was associated with an innovative workplace environment.⁶ In addition, a correlation between communication and work safety has been suggested.⁷

Several communication skills trainings (CSTs) have been given to health care providers such as doctors and nurses working in medical settings.^{8–13} These CSTs for health care providers were shown to be able to change the attitudes of these health care providers, improving their relationships with patients and increasing the level of satisfaction of patients and families involved.^{14–18} To date, however, no intervention study has examined the effectiveness of CST on nonmedical workers. Effective CSTs in the workplace are to promote communication behaviors to investigate solutions together with others to deal with many problems or issues.

CSTs conducted in medical settings to date have typically been performed quite thoroughly, at 3 days to 2 weeks in total and with single sessions of intervention lasting 2 to 8 hours. A correlation between length of training and effectiveness has been reported.¹⁹ However, the amount of time provided for workers for training at the workplace is usually limited to a single training session of 2 to 3 hours. Therefore, an effective CST program that

could feasibly be followed by workers in a shorter time period is essential.

Here, we conducted a brief CST program based on the principles of cognitive behavioral therapy (CBT) and investigated whether it would be effective in improving the communicative behaviors to solve problems that arise in the workplace.

METHODS

Participants and Procedure

This study was conducted as an in-house training program for section chiefs and staff members at a single company in the service industry in the Tokyo Metropolitan Area. Because of their small number, managers were not included in the study population. As section chiefs and their subordinates usually work together as colleagues, they were included. A request to participate in this research was sent in a company email, which explained the purpose and the methods of the study. After obtaining informed consent, the participants were assigned to an intervention or control group at random. In February 2015, the intervention group underwent group training on communication skills, with follow-up 1 month after the intervention. After the follow-up was completed, the control group was also provided with an identical intervention due to ethical considerations. No exclusion criteria were set. This study was approved upon by the Kitasato University School of Allied Health Sciences Ethics Committee and the Health and Safety Commission of the workplace concerned.

Intervention

The training content structure is summarized in Table 1. Training was identical for section chiefs and staff members. The intervention was a 120-minute group training on communication skills. The group training was conducted by an occupational physician who had received 10 hours of training from a specialist in CBT. The educational materials used in the present training were developed by reference to the CST guide²⁰ created by the National Center for Cognitive Behavior Therapy and Research, National Center of Neurology and Psychiatry. The content of the group training is broken down into the following three sections: the communication model, empathy and support to start relationships with others, and guiding people in using questions to solve problems. In the communication model section, people learned that there is a process for creating relationships that enables communication. Initially, people learn the importance of the progression of communication that consists of gathering information from others and assessing it, building rapport, and proceeding to solving problems.

Next, in the empathy and support to start relationships section, the listener comes to understand the importance of identifying the other person’s emotions in order to create a relationship of mutual trust with the speaker. An “emotion identification sheet” is used to train participants in identifying emotions. They then learn that it is possible to “create an empathetic and cooperative relationship” through the use of empathetic and supportive expressions.

From the Department of Occupational Mental Health, Graduate School of Medical Sciences, Kitasato University, Kanagawa (Drs Sasaki, Somemura, Nakamura, Yamamoto, Isojima, Tanaka); and Center for Cognitive Behavior Therapy and Research, National Center of Neurology and Psychiatry, Tokyo, Japan (Drs Shinmei, Horikoshi).

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Address correspondence to: Norio Sasaki, MD, Department of Occupational Mental Health, Graduate School of Medical Sciences, Kitasato University, 1-15-1 Kitasato, Sagami-hara-city, Kanagawa 228-8555, Japan (sasa1128@aol.com).

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TABLE 1. Contents of the Program

Topics	Contents
1. Communication Model in Psychotherapy	
1.1 Necessity of Communication Skills (10 min)	Giving an explanation of the necessity of learning basic techniques for communication that will provide a foundation for providing supportive assistance. Giving an explanation of the fact that communication is the foundation of human relationships and gaining an overall understanding of communication.
1.2 The Significance and Progression of Communication items (10 min)	Learning the basic communication model in which broad information is gathered from others and assessed, rapport is built, and then problem solving is undertaken. Learning that by understanding the model, they will actually be able to put it into practice.
2. Empathy and support that starts relationships	
2.1 Establishing Relationships where No Conflict Occurs (20 min)	Understanding the principles of relationships and learning the factors for human relationships where there are no conflicts. Understanding that it is important to identify the emotions of the other person. Emotion identification training using the "emotion identification sheet."
2.2 Making the Relationship Work with Empathy (20 min)	Creating human relationships by communicating in a way where people listen to each other's emotions and by giving them instructions using empathetic expressions. Concretely practicing examples of being forceful and examples of giving someone else instructions using the dialog sheet.
3. Guiding problem-solving through questions	
3.1 Defining Guided Discovery (20 min)	Gaining an understanding that it is necessary to intervene in problems that someone else has in order to step forward beyond the stage of relationship building. Learning the progression of guidance that allows a person to discover the answer to something that they want to solve on their own. This is done by presenting a plan for a solution to the problem.
3.2 How to Use the Socratic Method (40 min)	Gaining an understanding of the purpose of the Socratic method as uncovering the unrealistic portions of the speaker's thoughts or cognitions and then allowing them to notice the patterns and habits in their thinking. Questions are asked to deduce a specific answer, based on the five points used for devising questions, such as quantification, comparison, other points of view, evidence, and materialization. Thereafter, practice guiding another so that that person can discover the answer for themselves.

In guiding others by asking questions to solve problems section, the questioning technique known as the Socratic method is employed, and the speaker guides the listener to discover answers for problems. The Socratic method, also known as Socratic debate, is often used in CBT.²¹ This is a form of cooperative argumentative dialogue between individuals, which is characterized by the asking and answering of open-ended questions to promote critical thinking and new ideas to solve problems. The questions used focused on the "problems" the other person was having and on four areas: "emotions," "cognition," "behaviors," and "a person's body." To familiarize subjects with the Socratic method, training was conducted to allow people to deduce specific answers, externalize their problem, and connect it to specific support.

All of these exercises were performed in groups and were conducted primarily through role playing. The exercises used examples that could occur in the workplace, such as problems with human relationships at work, concerns about the way that a job is done, and worries about not being able to accomplish an objective. This content was set up so that the participants would be able to feel it as being real. We attempted to allow for more effective learning during the role playing by asking participants to write their conversation down on paper.

Outcome Assessment

The outcome was assessed by evaluating the differences between the groups 1 month after the training using original self-administered questionnaires. The questionnaire had five items with 10 possible responses to each. The items were as follows: "I am able to have an attitude of empathy and support," "I am able to talk with others while accepting their opinions," "I can skillfully ask others about problems and issues," "I am able to think together with others to solve problems and issues," and "I am able to communicate smoothly." The responses ranged from "1 point: It does not apply at all" to "10 points: It is very applicable."

Randomization

An independent researcher who had no direct contact with the participants used random computer-generated numbers to divide the participants into the two groups. The assessors were masked during analysis regardless of which group the participant was assigned to. The participants were aware of their assignment due to the nature of the intervention conducted.

Statistical Analysis

In a systematic review of the CST given to medical personnel, the effect size was taken to be a Cohen *d* of 0.37 [95% confidence interval (95% CI): 0.23 to 0.60].¹⁹ From calculations assuming an effect size of 0.37, an α error of 0.05, and a β error of 0.20, we deduced that a sample size of 92 people per group would be necessary. The intervention effect was evaluated by investigating the significance of the interaction between group and time, using the mixed-effects models (group, time, and group \times time interaction as fixed effects, and randomized participants as random effect). The effect size was investigated by comparing the difference in outcome score values (adjusted for baseline outcome value) of the two groups 1 month after intervention. To satisfy the intention-to-treat (ITT) principle, which states that all participants should be analyzed just as they were assigned, a multiple imputation method was employed to replace the missing outcome data on the assumption that the data could be considered to be missing at random.²²

The following items were investigated as baseline attributes: age, gender, consecutive years of service, job title (section chief or staff member), type of job, hours of overtime a month, average sleeping hours on weekdays, and the six-item Kessler psychological distress scale (K6) score. The K6 scale is widely used to assess psychological stress, with the score obtained from a simple self-rating questionnaire on symptoms of depression and anxiety experienced over the previous month.²³ The reliability and validity of the

Japanese version of the K6 questionnaire utilized in this study have been verified.²⁴

Work-related stress and job satisfaction were also investigated using a visual analog scale. When the data items were continuous variables, the *t* test was used for assessment, and Fisher exact test was used to assess the category variables. All tests used *P* value less than 0.05 as indicative of a significant difference. Statistical analyses were conducted using commercial software (SPSS Statistics 22 and SPSS Missing Values 22; IBM Corp, Armonk, NY).

RESULTS

Study Flow

Figure 1 shows the flow of the study. One of the 207 workers did not provide consent to participate in the research, as it did not work with their schedule. Excluding this person, all 206 people were randomly assigned into two groups, with 103 people each assigned to the control and intervention groups. Of the 103 people in the intervention group, 68 (66.0%) attended the group training and 81 (78.6%) responded to the questionnaire 1 month after the intervention. Of the 103 people in the control group, 80 people (77.7%) responded to the questionnaire 1 month after the intervention.

Baseline Characteristics

Baseline attributes of participants were based on questionnaire responses obtained from all participants (Table 2). There was no significant demographic difference observed between the two groups. A total of 44.6% of participants were male (44.6% in the intervention group and 44.6% in the control group) with an average age of 38.4 years (38.4 in the intervention group and 38.4 in the control group). No significant difference between the two groups was observed for any item assessing consecutive years of service, job title, type of job, number of overtime hours worked, and average sleep time. There was also no difference observed in K6 scores, work-related stress, job satisfaction, and the items “attitude of empathy and support,” “acceptance of others’ opinions,”

“skillfully asking others about problems,” “thinking together to solve problems,” and “ability to communicate smoothly.”

Intervention Effects

The results of the intervention are summarized in Table 3. A significant interaction was observed between group and time for the item “thinking together to solve problems” ($F_{1, 171.2} = 5.82, P = 0.02$). The difference between the scores of both groups 1 month after training was 0.30 points, and the effect size (Cohen *d*) was 0.35 (95% CI, 0.07 to 0.62).

In contrast, a tendency toward significant improvement was observed for the intervention group with regard to “attitude of empathy and support,” “acceptance of others’ opinions,” “skillfully asking others about problems,” or “ability to communicate smoothly, with interactions between group and time having the respective values $F_{1, 166.7} = 2.92, P = 0.09$; $F_{1, 164.0} = 3.58, P = 0.06$; $F_{1, 172.5} = 3.77, P = 0.05$; and $F_{1, 164.5} = 3.72, P = 0.06$.

DISCUSSION

The results of this study indicate that a brief CST effectively improved communication behavior by helping workers to think together with others to solve problems and issues. The CST in the present study was not simply meant to foster communication skills that improve relationships with other people; rather, the purpose of this program is to promote communication behaviors to solve problems that arise in the workplace. Participants mainly work in jobs that require investigating solutions together with others to deal with many problems or issues. Thus, learning communication skills to solve problems meets the needs of the people who took the training course. It is possible that this made it easy for the effects of the training to be reflected as results.

In addition, this training focused on three basic components of communication skills, making use of a concise program that could be understood step by step. For participatory training focused on role play, exercises contained content that is likely to be of interest to participants, such as those that occur in real workplaces. The training instructor in charge was occupational physician who

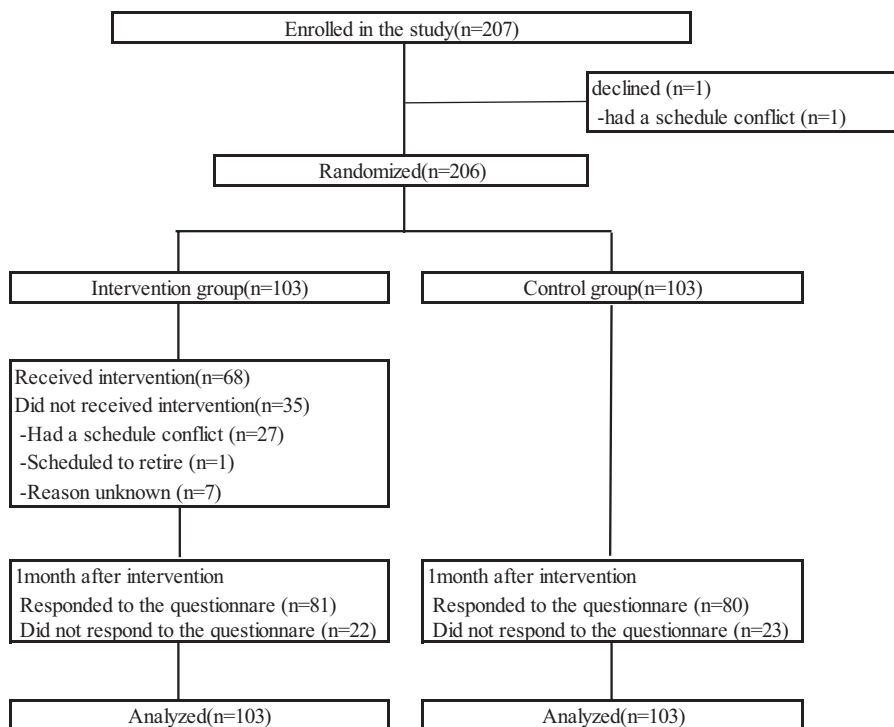


FIGURE 1. Consort flowchart of participants.

TABLE 2. Baseline Characteristics in the Intervention and Control Groups

	Total (n = 206)	Intervention (n = 103)	Control (n = 103)	P*
Gender male, n (%)	92 (44.6)	46 (44.6)	46 (44.6)	1.00
Age average, years (SD)	32.0 (5.5)	32.2 (5.4)	31.7 (5.6)	0.58
Years employed in current work, n (%)				
<1	24 (11.7)	12 (11.7)	12 (11.7)	0.37
1 ≤ x < 3	100 (48.5)	48 (46.6)	52 (50.5)	
3 ≤ x < 5	55 (26.7)	33 (32.0)	22 (21.4)	
≥5	20 (9.7)	8 (7.8)	12 (11.7)	
Missing	7 (3.4)	2 (1.9)	5 (4.9)	
Job title, n (%)				
Staff member	150 (72.8)	76 (73.8)	74 (71.8)	0.75
Section chief	56 (27.2)	27 (26.2)	29 (28.2)	
Number of subordinates, n (%)				
1 ≤ x < 3	6 (2.9)	1 (1.0)	5 (4.9)	0.33
3 ≤ x < 5	10 (4.9)	7 (6.8)	3 (2.9)	
5 ≤ x < 10	30 (14.6)	17 (16.5)	13 (12.6)	
≥10	10 (2.9)	2 (1.0)	8 (4.9)	
Missing	0	0	0	
Type of job, n (%)				
Office job	56 (27.2)	25 (24.3)	31 (30.1)	0.44
Technical job	28 (13.6)	14 (13.6)	14 (13.6)	
Development job	22 (10.7)	12 (11.7)	10 (9.7)	
Professional job	96 (46.6)	48 (46.6)	48 (46.6)	
Others	3 (1.5)	3 (2.9)	0 (0.0)	
Missing	1 (0.5)	1 (1.0)	0 (0.0)	
Hours of overtime a month, n (%)				
<20	118 (57.3)	57 (55.3)	61 (59.2)	0.21
20 ≤ x < 45	70 (34.0)	39 (37.9)	31 (30.1)	
45 ≤ x < 80	8 (3.9)	5 (4.9)	3 (2.9)	
≥80	3 (1.5)	0 (0.0)	3 (2.9)	
Missing	7 (3.4)	2 (1.9)	5 (4.9)	
Nightly hours of sleep on weekdays, n (%)				
<4	0 (0.0)	0 (0.0)	0 (0.0)	0.13
4 ≤ x < 5	20 (9.7)	13 (12.6)	7 (6.8)	
5 ≤ x < 6	83 (40.3)	48 (46.6)	35 (34.0)	
6 ≤ x < 7	76 (36.9)	30 (29.1)	46 (44.7)	
7 ≤ x < 8	16 (7.8)	8 (7.8)	8 (7.8)	
≥8	4 (1.9)	2 (1.9)	2 (1.9)	
Missing	7 (3.4)	2 (1.9)	5 (4.9)	
K6 score [†] , mean (SD)	5.6 (4.7)	5.4 (4.5)	5.8 (4.8)	0.57
Work-related stress, mean (SD) [‡]	4.4 (2.7)	4.4 (2.6)	4.5 (2.7)	0.80
Job satisfaction, mean (SD) [‡]	6.1 (2.6)	5.9 (2.6)	6.2 (2.5)	0.44
Attitude of empathy and support, mean (SD) [§]	7.1 (1.8)	7.1 (1.8)	7.2 (1.8)	0.55
Acceptance of the others' opinions, mean (SD) [§]	7.1 (1.8)	7.0 (1.7)	7.2 (1.8)	0.38
Skillfully asking others about problems, mean (SD) [§]	5.8 (1.8)	5.7 (1.7)	5.9 (1.9)	0.34
Thinking together to solve problems, mean (SD) [§]	7.0 (1.8)	6.9 (1.9)	7.1 (1.8)	0.42
Ability to communicate smoothly, mean (SD) [§]	6.6 (1.7)	6.6 (1.7)	6.7 (1.7)	0.67

SD, standard deviation.

*Independent *t* test for difference between groups for continuous measures and Fisher exact test for differences between groups in categorical characteristics.[†]The six-item Kessler psychological distress scale.[‡]Evaluated using visual analogue scale from 0 to 10, with 0 indicating not at all, and 10 indicating very much.[§]Scored on a scale 1 to 10, with 1 indicating not at all, and 10 indicating very well.

knew workplace conditions well. This physician conducted their training using an easy-to-understand vocabulary. The participants were familiar with group discussions and were able to deepen their understanding of communication skills by engaging in a lively exchange of opinions. Despite the short-term nature of the training, results showing significant differences were produced.

Although there was a trend toward significant improvement observed for the four items "I am able to have an attitude of empathy and support," "I am able to talk with others while accepting their opinions," "I can skillfully ask others about problems and issues," and "I am able to communicate smoothly," no statistically significant difference between groups was shown. One possible reason for this is that the training time was too short to allow the participants to gain an adequate understanding of all content.

Further, the percentage of people who underwent the training session was low, partially because it overlapped with a busy time at work.

A review of 13 articles on CSTs by Barth and Lannen¹⁹ provided to medical professionals working in oncology showed that training health professionals by CST is a promising approach to change communication. In a systematic review by McGilton et al,²⁵ the CST intervention demonstrated a positive change in medical professionals' communication behaviors, communication skills, and knowledge about communication. However, the CSTs used in medical settings required an intervention time period of several days to several weeks. Given this, the previous reviews have stated that further investigation based on economic considerations and feasibility is required.^{19,25}

TABLE 3. Comparison of Intervention and Control Groups at 1-Month Follow-Up

	Mean Scores (SE)*		Group × Time Interaction [†]	Effect Size (95% CI)*
	Intervention Group (n = 103)	Control Group (n = 103)		
Attitude of empathy and support	7.2 (0.08)	7.0 (0.08)	0.09	0.25 (−0.03 to 0.52)
Acceptance of the others' opinions	7.1 (0.07)	6.9 (0.08)	0.06	0.24 (−0.03 to 0.52)
Skillfully asking others about problems and issues	6.0 (0.14)	5.8 (0.14)	0.05	0.14 (−0.14 to 0.40)
Thinking together to solve problems and issues	7.1 (0.08)	6.8 (0.09)	0.02	0.35 (0.07 to 0.62)
Can communicate smoothly	6.7 (0.11)	6.5 (0.11)	0.06	0.18 (−0.09 to 0.46)

CI, confidence interval; SE, standard error.

*Adjusted for baseline score of each outcome.

[†]P value assessed using linear mixed models, including group, time, and group × time as fixed factors; participants as a random factor.

A characteristic of our study was that the CST program offered was brief and could be conducted by an occupational physician. Education in the workplace should be brief to minimize interruption and ensure provision to as many employees as possible. To enable implementation in a workplace setting and to reduce the economic and time constraints of employees, the program was simplified even more than previous studies in medical settings. On the contrary, concern for benefits being compromised due to oversimplification is therefore justified. To counteract any detractions due to the simplicity of our program, we should have utilized homework or E-learning as supplemental materials.

The contents of the CST in the present study were based on the principles of CBT. CBT in medical settings to date has mainly involved high-intensity CBT centered on individual psychotherapy. However, in recent years, low-intensity CBT that employs the Internet, books, distributed materials, or the provision of information or education through group training has been shown to have an effect on reducing psychological distress^{26,27} and absenteeism due to mental illness.^{28,29} In addition, significant reductions in the level of depression have been indicated in randomized controlled trials (RCTs) that employed problem-solving methods. CBT emphasizes that the listener should create an empathetic and cooperative relationship to increase the subject's ability to cope with problems by working on dysfunctional cognition.³⁰ Repairing dysfunctional cognition might improve their flexibility regarding new ways of thinking and action, help them accept their role in a problem, find more solutions for the problem, and take action appropriate to a given situation.^{31,32} In this study, the components of CBT were proactively incorporated into the CST.

In observational studies, it has been suggested that the improvement of communication skills between workers and superiors could be related to an increase in work satisfaction and reduced work-related stress.^{33–35} In future studies, it will be necessary to examine the effects of a CST on increasing job satisfaction and work-related stress. Furthermore, the improvement of workers' performance of duties is an extremely important topic for businesses. Cross-sectional studies examining the factors that determine an innovative workplace atmosphere identified a correlation between a better environment for communication and a more innovative workplace.⁶ Thus, improving workers' communication skills could potentially contribute to improving worker performance and productivity.

As we have seen, effective communication has been shown to correlate with many key factors in the workplace. Therefore, our finding that a brief CST produced a recognizable improvement in workers' communication behaviors is considered to be significant.

Limitations

The following are limitations of this study:

1. Outcomes were evaluated using a questionnaire of our design whose reliability and validity have not been assessed. This may have caused measurement bias. Although a communications skills questionnaire specifically for physician–patient communication has been verified for reliability and validity, a similar evaluation scale for general workers is not available. To evaluate the impact of CST training on health care professionals' communication behaviors, video or audio recordings are mostly used in clinical settings.¹⁹ Information obtained by recording devices for both self-evaluation and evaluation by others has been used to assess the effect of CST training on communication behaviors.
2. The relevance of the results is not completely clear. We believe that our results, although their effect size was small, are important, because improvement of communication behaviors is suggested to be associated with reducing workers' stress and increasing job satisfaction. However, we investigated changes in communication behaviors and not outcomes such as workers' well-being, and were therefore unable to show whether the improvement in communication behavior by CST was associated with changes in workers' well-being.
3. The time period in which the training was conducted overlapped with a busy period at work, such that the rate of participation in the training program was 66.0%. It is necessary to avoid busy periods and to create a plan to increase the number of training sessions available. This will make it easier for participants to attend.
4. There were instances where people in the intervention group and the control group both worked at the same workplace, so it is possible that there was some type of information exchange that took place.
5. The observational period was quite short, such that the long-term effects were not sufficiently verified. Due to time constraints imposed by workplace convenience, this study's follow-up period was short-term. A study with a longer follow-up period is needed to confirm the effectiveness of CST in the workplace.
6. We conducted this CST without distinction between section chiefs and staff members. Although they work together and the management role of section chief is limited, some difference in the level of effects may have been detected due to differences between section chiefs and staff members in their need and responsibility to effectively communicate with others.

CONCLUSION

This study suggests that a simple CST program as part of work has the effect of improving communication behavior by helping workers to think together with others to solve problems and issues. It has been suggested that communication within the scope of one's work relates to stress in the workplace and that the improvement of workplace communication through CST training could potentially lead to an increase in the level of mental health of

workers and the level of work satisfaction. For these reasons, it is our hope that various RCTs for CSTs will be conducted for many more occupations and types of industries.

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